

Claims

1. A vehicular glazing panel comprising:
a pane of glass,
a first electrically conductive component which exists on a surface of the pane of glass, and
a second electrically conductive component which is joined to the first component by a lead-free solder,
wherein the lead-free solder includes a mechanical stress modifier which inhibits the occurrence of a stress fault in the pane of glass in the region of the solder.
2. A glazing panel as claimed in claim 1 wherein the mechanical stress modifier comprises a metal selected from bismuth, indium or antimony.
3. A glazing panel as claimed in claim 1 or claim 2 wherein the lead-free solder includes tin in an amount that is less than 90 % by weight.
4. A glazing panel as claimed in any preceding claim wherein a fall in the stress (σ) generated in the pane of glass, after an initial rise, is described as a function of time (t) by:
$$\sigma = A t^n$$

wherein n is a measure of the creep rate of the lead-free solder and has a value less than -0.130.
5. A glazing panel as claimed in any preceding claim wherein the surface of the pane of glass is provided around its periphery with a fired-ink band, on top of which the first electrically conductive component at least partially exists.
6. A glazing panel as claimed in claim 5 wherein the pane of glass is toughened and the stress fault therein manifests itself as blisters in the fired-ink band and in the corresponding regions of glass.

7. A glazing panel as claimed in claim 5 wherein the pane of glass is one ply of a laminate and the stress fault in the pane of glass manifests itself as one or more cracks therein.
8. A glazing panel as claimed in any preceding claim wherein the stress fault in the glazing panel manifests itself as a structural defect in the interface between the solder and the first electrically conductive component.
9. A glazing panel as claimed in any preceding claim wherein the first and second electrically conductive components comprise a busbar and an electrical connector respectively.
10. A glazing panel as claimed in any of claim 1 to 8 wherein the first and second electrically conductive components comprise an antenna element and an antenna connector respectively.
11. Use of lead-free solder for joining together two or more electrically conductive components that are comprised in a vehicular glazing panel, which includes a pane of glass, wherein the lead-free solder includes a mechanical stress modifier which inhibits the occurrence of a stress fault in the pane of glass in the region of the solder.